

Note No. 33
May 2004

Performance-Based Service Contracts in Navi Mumbai

Indian municipalities must increase the efficiency of their water and sanitation services to meet the needs of their growing populations. The USAID-FIRE (D) project supported the Navi Mumbai Municipal Corporation's (NMMC) efforts to improve the management of these key urban services by introducing consolidated, performance-based service contracts for water supply and sewerage. This Project Note describes the current water service delivery system, NMMC's present service contracts and inadequate performance, and the new performance-based contracts, their design, procurement and monitoring process, and lessons learned about private sector participation in municipal service delivery.

Navi Mumbai is a planned city on the outskirts of Mumbai, the capital of Maharashtra. As its Marathi name *navi* implies, it is a new city. The state's City and Industrial Development Corporation (CICDO) planned the city, which was developed in the early 1980s, and in 1998 turned over all major infrastructure services to the Navi Mumbai Municipal Corporation, which was established in 1991. The city's population is now 800,000. The core municipal services are managed by the private sector on a labor contract basis, i.e., contracts based solely on personnel costs. The municipality provides all material, including equipment and spare parts. Multiple contracts cover:

Water Supply

- Operation, repair and maintenance of ground and elevated storage reservoirs, and pump houses within the reservoir premises;
- Repairs and maintenance of internal distribution; and
- Meter reading and issuing bills to customers.

Wastewater Services

- Operation, repair and maintenance of sewage pumping stations;
- Operation, repair and maintenance of sewage treatment plants; and
- Repair and maintenance of sewer lines.

Solid Waste Management

- Street sweeping and drain cleaning;
- Transportation of waste; and
- Maintenance of dumping grounds.

These contracts are renewed annually. The private operators' cost estimates are compared to the corporation's, expressed as a percentage, and the lowest bidder is awarded the contract. The lack of performance criteria and the large number of contracts make it difficult for the city to control contractor performance. Consequently, the NMMC invited the USAID FIRE (D) project to assess the situation, help them consolidate these contracts, and prepare comprehensive performance-based service contracts for each of the three services. While this *Note* describes the rationale and obligations involved in the new contract documents for water services, the NMMC followed a similar concept for wastewater and solid waste management.

Current Water Service Delivery and Management Contracts

Current Service Delivery. Water is supplied to NMMC from a large reservoir receiving water from the Maharashtra Industrial Development Corporation (MDIC) and Maharashtra Jeevan Pradhikaran (MJP). The total supply from these sources is 167 million liters per day, nearly the estimated demand, but 30 percent of the water is lost in transmission and distribution through leaks, and thus unaccounted for and not billed. Bulk water is supplied to ground level storage reservoirs in each of the city's eight nodes, and then pumped to elevated storage reservoirs where it is disinfected to recommended

Performance-Based Service Contracts in Navi Mumbai

in October 2003 with a total cost of Rs. 170 million. Four contractors won the 15 main water distribution packages, which were area-based. Bids for maintenance of water supply in two out of the four low-income settlement packages were non-responsive, so the corporation continues to supply water to these areas through labor contracts. The city awarded contracts to operators for three wastewater packages in June and three other wastewater contracts in October 2003. The annual O&M fee for the wastewater contracts is Rs. 100 million.

Key issues raised during the contract design and bidding process include:

- The bids were expected to solicit local operators while at the same time incorporating efficiency monitoring mechanisms, but most bids submitted were from large contractors. This indicates that the new service/management contracts were equally favored as large-scale civil construction contracts.
- The requirement for “operator assessment of capital works” was not well understood and so the technical proposals lacked clarity on this point.
- While energy conservation was a key requirement, recommendations by bidders regarding improvements to pumping equipment were ambiguous.
- Another key requirement, detecting illegal connections, was viewed with skepticism. Bidders opined that the activity is politically sensitive and would be difficult to administer.
- While the O&M fee for the wastewater service bids was comparable to NMMC estimates, the O&M fee of most water supply bids was substantially higher. This reflected the bidders’ apprehensions regarding the expanded scope of work and bid evaluation complexity.
- Bidders did not meet NMMC expectations regarding providing improved service to slum areas, indicating that the city must provide private operators different incentives for these areas.

The main lesson learned has been that the performance-based service contract appears to be a suitable model for private sector participation in municipal service delivery. It allows the urban local body to prioritize investment decisions based on the private operator’s assessment of the system. In the short-term, the contracts’ bid prices nearly doubled water supply O&M costs, reflecting the expanded scope of services that attend to deferred maintenance. In the mid-term, these three-year contracts provide the operators sufficient time and exposure to municipal services to bring about system improvements that reduce costs and increase revenues. In the long-term, these contracts provide local bodies the experience and flexibility to move to management contracts and perhaps even long-term concessions with private operators. With the hiring freeze and prudent human resource planning advocated by the state Urban Development Department, local bodies could consider adopting this approach for outsourcing service delivery.

Vijay Padmanabhan, Senior Project Development Specialist of the Indo-USAID FIRE (D) project, with assistance from S. K. Tasgaonkar, FIRE project Field Officer, and staff of Navi Mumbai Municipal Corporation, wrote this *Project Note*. All *Project Notes* are available online at www.indiaurbaninfo.com under *newsletters*; www.dec.org, under *title search* “FIRE(D) Project Note;” and www.tcginternational.net, under *documents*.

The mission of the Indo-US FIRE-D Project is to institutionalize the delivery of commercially viable urban environmental infrastructure and services at the local, state and national levels. Since 1994, the Project has been working to support the development of demonstration projects and of a sustainable urban infrastructure finance system. Now, the Project is also pursuing this mission through:

- Expansion of the roles of the private sector, NGOs and CBOs in the development, delivery, operation and maintenance of urban environmental infrastructure;
- Increased efficiency in the operation and maintenance of existing water supply and sewerage systems;
- Strengthened financial management systems at the local level;
- Development of legal and regulatory frameworks at the state level;
- Continued implementation of the 74th Constitutional Amendment; and
- Capacity-building through the development of an Urban Management Training Network.

The FIRE-D Project Office

E-3/4, Vasant Vihar
New Delhi 110 057, India
Tel: (91-11) 2614-3551; 2614-9836; 2615-1081-83
Fax: (91-11) 2614-1420
savita@indo-usfired.com

Office of Economic Growth USAID/New Delhi

American Embassy
Shantipath, Chanakypuri
New Delhi 110 021, India

TCG International, LLC

1012 N Street, NW
Washington, DC 20001-4297, USA
(202) 667-3002

PADCO, Inc.

1025 Thomas Jefferson Street, NW, #170
Washington, DC 20007, USA

Funded under USAID Contract
#386-C-00-99-00071-00

The *Project Notes* series is edited by Kathy Desmond.

Performance-Based Service Contracts in Navi Mumbai

standards. It is then distributed to customers through a 423-kilometer network of iron and steel pipes. There are 67,663 water connections, metered and flat rate domestic connections and metered commercial and industrial connections. Four private contractors issue monthly bills and collection is handled by the NMMC and authorized private banks.

The key issues in service delivery include the following:

- Service areas assigned to elevated tanks are not proportional to demand and storage capacity, resulting in inequitable supply.
- Connections to feeder mains are subject to pressure fluctuations, resulting in inadequate supply.
- System design originally envisioned sufficient pressure to supply apartments on higher floors of multi-story buildings, but rapid growth, unauthorized connections, and physical losses prevent this objective from being achieved.

Water Supply Management. The water supply system is operated and maintained by 42 contracts covering billing; operation and maintenance (O&M) of the main reservoir, chlorination plants, pumping stations, and elevated reservoirs; and repairs and maintenance of the feeder mains and distribution systems. These contracts are managed and supervised by the City Engineer and his staff of four deputy and 14 junior engineers in the municipal Water Supply Department. All major supplies and spare parts are provided by the city.

The city’s water supply revenue comes principally from water charges received from customers; water tariffs were 87 percent of total water revenue of Rs. 300 million in 2000-01. However, total water revenues were only 60 percent of the total expenditure on water supply, Rs. 503 million. About 75 percent of the total expenditure was for bulk water purchase from MIDC and MJP. The annual cost of the service contracts was Rs. 30 million. Pipeline and pump repairs cost Rs. 88 million, or 18 percent of total water supply expenditure, and included contract services. Another seven percent was for electricity charges.

The existing labor-only contracts did not provide efficient management of the city’s water supply. The key issues resulting in inadequate performance include the following:

- Weak system operations. Inappropriate handling of pumping led to high energy bills; inappropriate system management and failure to attend to customer queries and complaints about water quality, pressure, leaking public stand posts and damaged pipes resulted in inequitable supply.
- Lack of water audits. Failure to detect and rectify leaks and failure to conduct audits to detect illegal use of water, unauthorized connections, and faulty meters led to loss of water and potential revenue.

Water Supply Revenue Income and Revenue Expenditures, 2000-01

Revenue Income	
Water Charges	259.68
Connections and Others	19.24
Water Benefit Tax	21.24
Income from Municipal Property	0.30
Total Revenue Income	300.46
Revenue Expenditure	
Staff, Establishment & Admin.	1.94
Engineering Works	0.16
Water Purchase	376.62
Pipeline & Pump Repairs	88.12
Electrical Charges	36.00
Total Revenue Expenditure	502.84
Surplus/Deficit	(202.38)

Source: NMMC, unaudited figures. All figures in Rs. million.

- Lack of energy audits. Failure to reduce energy consumption through regulation of pumping operations and inability to carry out comprehensive maintenance of pumps and/or install efficient pumping equipment to reduce electricity consumption increased expenditures.

New Performance-Based Service Contracts

The FIRE (D) project, working with the Municipal Commissioner and Water Supply Department engineers, drafted performance-based service contracts to address these issues. The team prepared 18 contracts to manage water distribution and one to manage the transmission system. (The corporation will handle billing rather than outsource this function. The operator will identify customers to be billed and the corporation will issue bills.) The rationale for repackaging the 42 contracts was to improve efficient operation and take specific steps to:

- Maximize the portion of water provided to the transmission system that is billed, striving to reach 100 percent;
- Reduce, over time, the losses and leakages in the system;
- Detect illegal use of water by customers; and
- Minimize the consumption of electrical power.

In the new contracts, the operator is expected to judge the extent of repairs and maintenance required to operate the system for three years. The operator’s bid price includes administrative charges, consumables, and depreciation on tools, vehicles and equipment, in addition to personnel. The bid evaluation is based on the operator’s evaluation of

the maintenance needed, system improvements for enhanced efficiency, and savings in electricity charges, rather than the corporation's estimate.

Contract Design

The scope of work for these contracts included the following six types of service:

1. System Operations to ensure equitable water distribution, adequate water pressure and quality, proper facility operations, prompt handling of customer queries and complaints, and developing contingency plans.
2. Operations Based on NMMC-Specified Rates for services such as customer requests made directly to the operator for new connections and sale of potable water.
3. Water Audits to help operators minimize the amount of water lost in the distribution network and increase revenues. Audits include detecting leakages in the network and at customer connection points and detecting unauthorized/illegal connections and faulty meters. Operators are also required to rectify the problems identified.
4. Energy Audits to help operators minimize power consumption at pumping stations and to follow warranted pumping regulations, maintain power, replace old/worn out pipes, and follow better maintenance practices of electrical installations.
5. Repairs and Maintenance, both preventive and routine maintenance, including minor repairs. The operators will provide spare parts, material, and tools required for routine repairs. However, NMMC will supply material required for certain major breakdowns, at no cost to the operators.
6. Advice to NMMC on future events or circumstances that may adversely affect operations and on how to improve the quality of operations, reduce water/energy losses, and improve customer service.

In addition, contractors are expected to carry out extra work due to events not defined in the scope of work, such as extension of service area, at a mutually agreed upon fee.

The new contracts envisioned provision of services for three years, with an annual performance review required for continuance. The corporation would pay a monthly fee during the first year, with an annual escalation indexed to the wholesale price index.

Procurement Process

Eligible bidders included firms short-listed on the Government of Maharashtra's Technical Service Provider list by the Water and Sanitation Department with a minimum of five years experience in operations, repairs, maintenance, and improvement of water supply systems. Firms short-listed with other state agencies, including CIDCO, MJP, and MIDC, under specified categories, were also eligible.

The bid evaluation was based on bid price that included: the O&M fee for the six services listed above for three years; power consumption for three years; and 60 percent of the capital costs of bidder-proposed improvements. On award of a contract, the operator and city would reconfirm the bidder's assessment of system improvements needed. The agreed upon improvements would be paid for and carried out by the NMMC; the corporation will pay only the O&M fee component of the total bid price.

Performance Monitoring

Benchmarks will be set to monitor and evaluate operator performance. Periodic evaluations will be conducted to determine the percentage of water billed compared to the amount received from the transmission system and the amount of electric power consumed compared to water billed and the state Electricity Board charges. The benchmarks will be reset following major repairs, replacement, or system improvements.

Contractor performance will be rewarded through financial incentives and penalties. Operators will be rewarded for: detection of illegal water use and unauthorized connections; reducing water loss through detection and repair of leaks; and reducing power consumed through optimal pump use. Operators will be penalized if they do not distribute potable water on a fixed schedule and with sufficient pressure. Deviations warranting penalties also include poor water quality, increased power consumption, delays in attending to customer queries and complaints, and provision of unauthorized services.

The incentives and penalties will be determined every two months, and added to or subtracted from the monthly payment. If the accrued penalty at any time exceeds ten percent of the annual contract price, the NMMC would review contract continuation. The incentive payments are capped at ten percent of the annual contract price.

New Contracts Issued and Lessons Learned

The corporation issued 25 new bid packages for water supply and wastewater in March 2003. While 19 new performance-based contracts for water were consolidated from 42 existing contracts, six new contracts for wastewater services were consolidated from 48 existing contracts. The city held a pre-bid meeting to clarify questions of interested operators and received bids in May 2003. Some firms bid on more than one package. Eight packages in water supply and three in wastewater received non-responsive or single bids and were recalled. The bids were evaluated and those with the lowest price were asked to clarify points in their technical proposals. The corporation awarded 19 water supply contracts